

# Astrophysics and Planetary science for development in Africa

David Baratoux<sup>1</sup>, Maram Kaire<sup>2</sup>, Mamadou N'Diaye<sup>3</sup>, Anne Verbiscer<sup>4</sup>, Wolf Reimold<sup>5</sup>, Pierre Rochette<sup>6</sup>, Christian Koeberl<sup>7</sup>, Modou Mbaye<sup>8</sup>, Cheikh Ahmadou Bamba Niang<sup>8</sup>, Sylvain Bouley<sup>9</sup>, Suniti Karunatilake<sup>10</sup>, Jesús Martínez-Frías<sup>11</sup>, and Eric Lagadec<sup>12</sup>

<sup>1</sup>French Research Institute for Sustainable Development

<sup>2</sup>Association Senegalaise pour la Promotion de l'Astronomie

<sup>3</sup>Observatoire de la Côte d'Azur

<sup>4</sup>University of Virginia

<sup>5</sup>Institute of Geosciences, University of Brasília

<sup>6</sup>CEREGE ARBOIS

<sup>7</sup>University of Vienna

<sup>8</sup>Cheikh Anta Diop University

<sup>9</sup>GEOPS—Géosciences Paris Sud, Université Paris-Sud, CNRS, Université Paris-Saclay

<sup>10</sup>Louisiana State University

<sup>11</sup>Consejo Superior de Investigaciones Científicas, Complutense University of Madrid

<sup>12</sup>Observatoire de la Côte d'Azur

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## Abstract

Africa is a continent with great assets for Astrophysics and Planetology (including astrobiology): skies unpolluted with anthropogenic light, meteorites and impact structures, and vast sedimentary-metamorphic-igneous records of early Earth' geologic evolution. Aware of these assets, a community of scientists is involved in increasingly ambitious projects. Their original works notably highlight the African scientific heritage, alongside engagement in economic, cultural and societal development. One of the notable achievements of this group is the observation of three stellar occultations by asteroids in Senegal, in direct support of NASA missions of exploration of the Solar System. The first campaign was achieved in August 2018, in support of the flyby of Kuiper belt object Arrokoth by the New Horizons spacecraft. The second and third campaigns, in September 2020 and October 2021, in preparation for the upcoming flybys of Trojan asteroids Polymele and Orus by NASA's Lucy mission, were led by Senegalese scientists, supported by a few European astronomers. Other notable achievements include fieldwork at potential or known impact structures (including search of tektites in Côte d'Ivoire), providing opportunities for student training and local education. Members of our group have also launched the first popular science magazine on astronomy (in French) (l'Astronomie Afrique). Last, founding the RISE 5A project (Astronomy and Astrophysics Arising Across Africa), with proposal intended to be resubmitted to the Horizon Europe program in 2022, together with some joint educational initiatives linking Egypt and Spain, will hopefully open new opportunities for staff and students exchanges between Europe and Africa. These achievements also impart an enduring engagement of the youth, while reinforcing the role of West African scientists in the scientific, cultural, and economic development of their countries and communities worldwide.

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**Astrophysics and Planetary science for development in Africa**

David Baratoux, French Research Institute for Sustainable Development, Geosciences Environnement Toulouse, Toulouse, France; Université Félix Houphouët-Boigny, UFR Sciences de la Terre et des Ressources Minères, Abidjan, Côte d'Ivoire, Maram Kaire, Association Senegalaise pour la Promotion de l'Astronomie, Dakar, Senegal, Mamadou N'Diaye, Observatoire de la Côte d'Azur, Laboratoire Lagrange, Nice, France, Anne Verbiscer, University of Virginia, Charlottesville, VA, United States, Wolf Uwe Reimold, Institute of Geosciences, University of Brasília, Laboratory of Geochronology and Isotope Geochemistry, Brasília, Brazil, Pierre Rochette, CEREGE ARBOIS, Aix En Provence, France, Christian Koeberl, University of Vienna, Vienna, Austria, Modou Mbaye Sr, Cheikh Anta Diop University, Dakar, Senegal, Cheikh Ahmadou Bamba Niang, Cheikh Anta Diop University, Department of Earth Science, Dakar, Senegal, Sylvain Bouley, GEOPS—Geosciences Paris Sud, Université Paris-Sud, CNRS, Université Paris-Saclay, Orsay, France, Suniti Karunatilake, Louisiana State University, Baton Rouge, LA, United States, Jesús Martínez-Frías, Consejo Superior de Investigaciones Científicas, Complutense University of Madrid, Instituto de Geociencias, Madrid, Spain, Eric Lagadec, Observatoire de la Côte d'Azur, Laboratoire Lagrange, Nice, France and AFIPS, RISE 5A and MATERNA

**Abstract Text:**

Africa is a continent with great assets for Astrophysics and Planetology (including astrobology): skies unpolluted with anthropogenic light, meteorites and impact structures, and vast sedimentary-metamorphic-igneous records of early Earth geologic evolution. Aware of these assets, a community of scientists is involved in increasingly ambitious projects. Their original works notably highlight the African scientific heritage, alongside engagement in economic, cultural and societal development. One of the notable achievements of this group is the observation of three stellar occultations by asteroids in Senegal, in direct support of NASA missions of exploration of the Solar System. The first campaign was achieved in August 2018, in support of the flyby of Kuiper belt object Arrokoth by the New Horizons spacecraft. The second and third campaigns, in September 2020 and October 2021, in preparation for the upcoming flybys of Trojan asteroids Polymele and Orus by NASA's Lucy mission, were led by Senegalese scientists, supported by a few European astronomers. Other notable achievements include fieldwork at potential or known impact structures (including search of tektites in Côte d'Ivoire), providing opportunities for student training and local education. Members of our group have also launched the first popular science magazine on astronomy (in French) (l'Astronomie Afrique). Last, founding the RISE 5A project (Astronomy and Astrophysics Arising Across Africa), with proposal intended to be resubmitted to the Horizon Europe program in 2022, together with some joint educational initiatives linking Egypt and Spain, will hopefully open new opportunities for staff and students exchanges between Europe and Africa. These achievements also impart an enduring engagement of the youth, while reinforcing the role of West African scientists in the scientific, cultural, and economic development of their countries and communities worldwide.

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david.baratoux@ird.fr

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**First Presenting Author****Presenting Author**

David Baratoux

Primary Email: david.baratoux@ird.fr

**Affiliation(s):**

Université Félix Houphouët-Boigny  
UFR Sciences de la Terre et des Ressources Minères  
Abidjan N/A (Côte D'Ivoire)

French Research Institute for Sustainable Development  
Geosciences Environnement Toulouse  
Toulouse F-31400 (France)

**Second Author**

Maram Kaire

Primary Email: maramkaire@gmail.com

**Affiliation(s):**

Association Senegalaise pour la Promotion de l'Astronomie  
Dakar (Senegal)

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**Third Author**

Mamadou N'Diaye  
Primary Email: mamadou.ndiaye@oca.eu

**Affiliation(s):**

Observatoire de la Côte d'Azur  
Laboratoire Lagrange  
Nice (France)

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**Fifth Author**

Anne Verbiscer  
Primary Email: av4n@virginia.edu

**Affiliation(s):**

University of Virginia  
Charlottesville VA 22903 (United States)

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**Fifth Author**

Wolf Uwe Reimold  
Primary Email: Wolf.uwer@gmail.com

**Affiliation(s):**

Institute of Geosciences, University of Brasilia  
Laboratory of Geochronology and Isotope Geochemistry  
Brasilia, (Brazil)

---

**Sixth Author**

Pierre Rochette  
Primary Email: rochette@cerege.fr

**Affiliation(s):**

CEREGE ARBOIS  
Aix En Provence 13545 (France)

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**Seventh Author**

Christian Koeberl  
Primary Email: christian.koeberl@univie.ac.at

**Affiliation(s):**

University of Vienna  
Vienna A-1090 (Austria)

---

**Eighth Author**

Modou Mbaye Sr  
Primary Email: modou2812.mbaye@ucad.edu.sn

**Affiliation(s):**

Cheikh Anta Diop University  
Dakar (Senegal)

---

**Ninth Author**

Cheikh Ahmadou Bamba Niang  
Primary Email: cabniangeos@gmail.com

**Affiliation(s):**

Cheikh Anta Diop University  
Department of Earth Science  
Dakar (Senegal)

---

**Tenth Author**

Sylvain Bouley  
Primary Email: sylvain.bouley@gmail.com

**Affiliation(s):**

GEOPS—Géosciences Paris Sud, Université Paris-Sud, CNRS, Université Paris-Saclay  
Orsay (France)

---

**Eleventh Author**

Suniti Karunatilake  
Primary Email: suniti.kumara@gmail.com

**Affiliation(s):**

Louisiana State University  
Baton Rouge LA (United States)

---

**Twelfth Author**

Jesús Martínez-Frías  
Primary Email: j.m.frias@igeo.ucm-csic.es

**Affiliation(s):**

Consejo Superior de Investigaciones Científicas, Complutense University of Madrid  
Instituto de Geociencias  
Madrid (Spain)

---

**Thirteenth Author**

Eric Lagadec  
Primary Email: eric.lagadec@oca.eu

**Affiliation(s):**

Observatoire de la Côte d'Azur  
Laboratoire Lagrange  
Nice (France)

---

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